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The Flora of a Montana Pond.

R. S. WILLIAMS.

A few miles from Great Falls, near the middle of a low flat extending out from the valley of Sand Coulee, is a slight circular depression in the clayey soil, perhaps two hundred yards across. In rainy seasons this is filled with water to a depth of three or four feet in the center, gradually diminishing in depth toward the edges. It is entirely without springs and has no particular inlet or outlet. Last season, after having been dry and almost without sign of vegetable life for a year or more, it was filled with water, and the following notes relate to the abundant vegetation that sprang up from a seemingly lifeless clay-bed. Reference also will be made to the plants observed on the surrounding prairie, within a distance of a few hundred yards of the water, but the observations, relating to the latter part of August, do not include, of course, many noticeable species of the spring and early summer.

The most abundant grass of the vicinity was *Agropyrum glaucum*, of a growth sufficient to make an excellent hay crop. Mingled with this, and occasionally the more abundant of the two, was found *Alopecurus Californicus*. This is a western species, and was determined by Dr. Vasey, who remarked that he had not before received it from any point so far to the eastward. Dead culms of this *Alopecurus* that had matured seed in June were standing on the same plants beside the still green, but ripening culms of a second growth. *Bouteloua oligostachya* was common as elsewhere, often being the principal grass on any slight knoll or hillside. The only other grass observed was *Schedonnardus Texanus*. It occurred mostly in separate areas in rather compact patches a foot or so across, and although growth had ceased for some time it was perhaps more noticeable than earlier, owing to the dry, whitish appearance of the slender, curved culms that stood out in all directions in an intricate network.

Mingled with these grasses were a few composites in bloom, the most conspicuous being *Grindelia squarrosa*, *Aster commutatus* and *Helianthus annuus*. *Gutierrezia Euthamiæ*, growing almost everywhere, was scarcely yet in flower, not being in full

bloom till September, or even October. One more plant of this family, and perhaps the most curious and interesting of them all, was *Evax prolifera*, growing in low places where the grass was thin or altogether wanting. In many respects it resembles the Edelweiss of the Alps, although its home and surroundings are so exceedingly humble as compared with that celebrated plant. Dead specimens of the *Evax* were very numerous in places, and resembled, more than anything else, small, blackish tufts of up-turned fibrous roots. The stems and branches of the growing plants, indeed, are stiff and wiry, and would hardly be noticed were it not for the curious heads of woolly flowers they bear.

In about the same situations as the above, *Herpestis rotundifolia* was found abundantly both in flower and fruit. The range of this is given in the last edition of Gray's Manual as "Illinois to Minnesota, Missouri and southward," but in the Synoptical Flora of North America it is referred to as growing out of ordinary range in Fresno Co., California, and it evidently may prove to be more of a western plant than has heretofore been supposed. The corollas of the plants in the present case were perfectly white, with lobes just about equal and stamens of equal length. I called the attention of Prof. Eaton to these points, and he writes that he has evidently the same plant from Illinois, collected by Lesquereux, who notes, "corolla white, almost equally five-cleft." Possibly the normal color of the flower is white, although the botanists till recently have mostly given it as blue.

Other plants growing about the pond were *Limosella aquatica*, very abundant and often submerged in the water, *Rumex salicifolius*, *Verbena bracteosa*, *Oenothera triloba*, a common but inconspicuous species, *Krynitzkia Californica*, *Boisduvallia glabella*, abundant along the very edge of the pond, and *Gilia intertexta*, of which only a specimen or two was observed. These last two mentioned species are well-known western plants that here in Montana, at least, cross to the eastern slope of the Rocky Mountains.

The above about completes the list of species noted around the margin of the pond, and it will be observed does not include a shrub or tree of any kind. Doubtless rose bushes of stunted growth existed, but were overlooked at this season.

In the water the most conspicuous plant was *Eleocharis palustris* rising to a height of one or two feet above the surface, and affording shelter to a flock of some forty or fifty wild ducks. *E. acicularis* was the only other sedge noticed, and grew perhaps more along the edge of the pond than in the water. *Alisma Plantago* and *Sagittaria variabilis* were both common. *Potamogeton hybridus*, not before noted in Montana, filled the water in places with a tangled mass, while a single plant of *Naias flexilis* was found near the shore, but a somewhat prolonged search failed to reveal a second specimen. Two species of *Elatine* were abundant. *E. Americana* growing both on the muddy banks and submerged in the pond, and *E. Californica*, a western plant, only found submerged. This last has pedicelled flowers and much curved seeds. A few blossoms of *Utricularia vulgaris* rose out of the water, but the plants, which were common enough, were mostly not yet in bloom; also a few plants of the *Herpestis* above mentioned were found in several inches of water with leaves mostly floating and flowers emergent. The only other aquatic flowering plant recorded was *Callitriche verna*, growing very abundantly in some of the shallower places.

A single moss was found mingled with the aquatic plants. It was evidently a sterile, lax form of *Hypnum fluitans*, and was not common.

The three remaining plants collected at this time belonged to the Characeæ and were submitted to Dr. T. F. Allen. He writes that they are of much interest, the species being *Nitella clavata*, *N. opaca* and *Chara Altaica*, this last not before credited to North America, and originally coming from the Altai Mountains of Asia. The species were all quite abundant, and bore well-developed fruit. They were mostly growing near the margin of the pond in two or three inches of water, and were quite strongly attached to the mud of the bottom.

In closing I would make grateful acknowledgment to Prof. D. C. Eaton for assistance in determining all the more difficult species when not otherwise stated.

Great Falls, Mont.